

# Demand Response and Integrated Resource Planning

## A Winning Combination

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Demand Response Challenges and Opportunities Workshop  
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Powering forward. Together.



# Key Attributes of the New DR

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- Automated
- Ease of Use
  - Forecasting
  - Dispatch
  - Allocation of Resource (Economic, Reliability)
  - Visibility of Location and Availability of Resource
- Capability to deliver high value resources, by providing rapid response, and communicating real time price and control signals
- Technologies leverage open standards
- Platforms are highly scalable and flexible
- Track DR resources for reporting
- Cyber security is built and tested

# Key Attributes of the New DR

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- Today's demand response is integrated to many of SMUD current business systems
  - SSN, MDMS, EMS, GIS, SAP
  - Future can be ACLM, DA, DMS, OMS
  - Future of DR is automated and machine to machine
    - DRMS AutoDR uses the Internet to interface directly with customer systems
    - DRMS uses SSN and Broadband to interface directly with customer systems
    - DRMS can ultimately support all DR including legacy DR such as ACLM, VECP and contracts
    - DRMS can be integrated with DA, DMS, and OMS

# Common Issues with DR

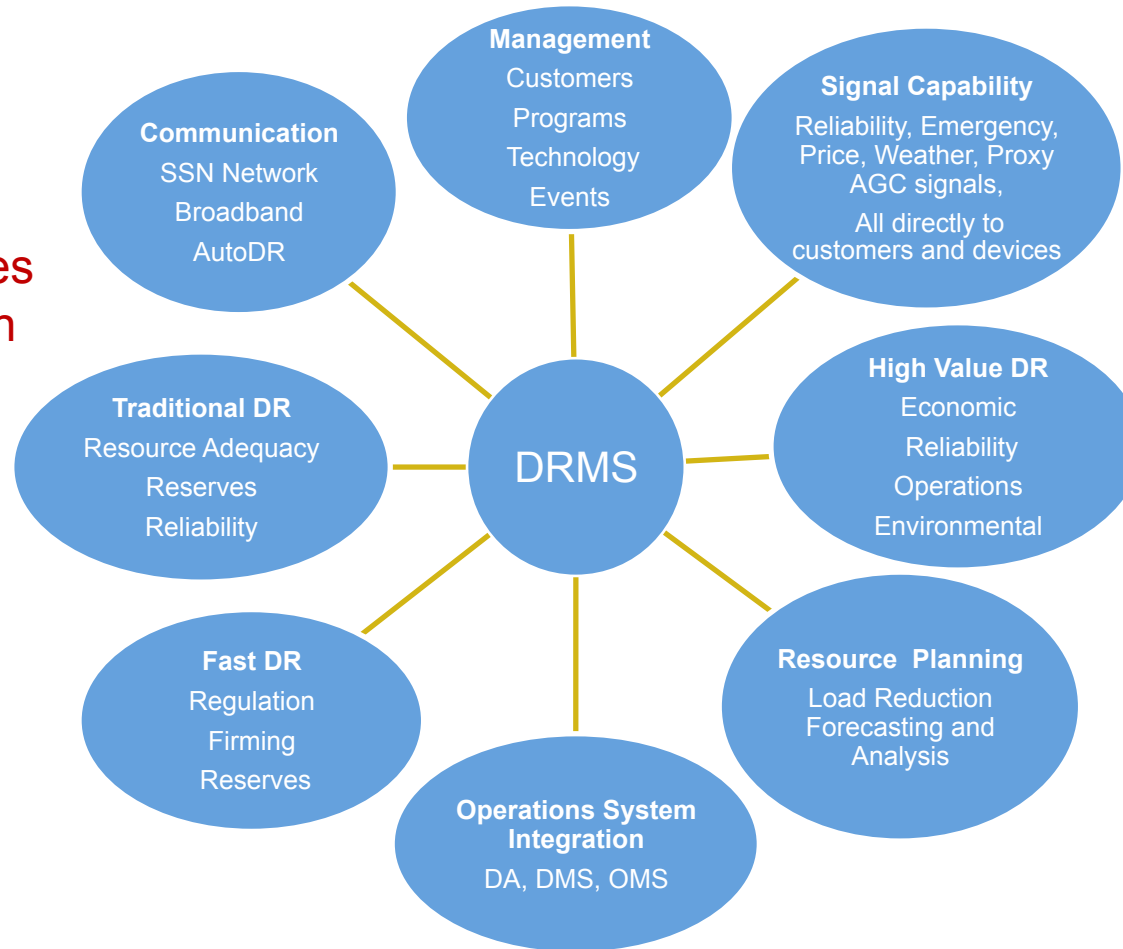
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- Trust in the availability and reliability of the resource
- Uncertainty in the sustainability of the resource
- Alignment and competition with traditional resources (cost and capability)
- Need for investment before the program is needed
  - Requires an 18 to 36 month lead time for full program capability
  - Steps include:
    - Build the infrastructure
    - Design and conduct pilot programs
    - Establish resource capability, characteristics, and value
    - Demonstrate viability of programs and value of resources

# Demand Response Management System (DRMS) Capability

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Many Varieties  
of Eggs are in  
the DRMS  
Basket



# DR – Meeting Needs and Providing Solutions

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## ■ Needs

- Resource Adequacy
- Reserves
  - Non-Spin Reserve
  - Spinning Reserves
- Regulation
- Renewable Firming Resource
- Call Options
- Load Reduction
- Location/Substation/ Feeder/ Transformer Options for load growth, EV and renewable integration
- Transmission/Distribution Investment Alternative
- BANC

## ■ Solutions – Menu Approach

- AutoDR
- Pricing: TOU and CPP
- Thermostat Programs
- Direct Load Control
- Weather Independent Solutions
- Storage (Thermal/ Electrical/Other)
- Adjustable Customer Load (Up/Down)
- Special Contracts
- Voluntary Emergency Curtailment (VECP)
- BANC Resources

# Overall Goal for 2014 and Beyond

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- Integrate DR from a variety of sources into SMUD business operations as a committed, on-going, long-term activity
- Obtain funding commitments to:
  - Leverage Smart Grid projects to develop new Commercial, Industrial, and Residential programs to serve IRP objectives
  - Technology enhancement to the DRMS, Silver Springs, metering platforms and others as required
  - Exploring integration of DR into the future Distribution Management Systems

# Overall Goal for 2014 and Beyond

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- Develop AutoDR to its potential – 40 MW (or more) is a realistic goal
- Develop Small Commercial and Residential DR to its potential
  - Technology is not yet ready for large deployment
  - Customer response to program designs and technology options requires further study
  - Migration of customers from ACLM to a new model will require a few more years as technology standardizes and matures
- Deliver a DR portfolio that is reasonable and achievable
  - Current projections show 295 MW or about 9% of system load by 2021 is possible with a sustained commitment to DR



# SMUD Implementation of the New DR

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- The new DR is a multi-dimensional platform
- Business processes, technology, policy, and program design all being built to work together and integrated across the organization
  - This is a continuing work-in-progress and on-going learning opportunity
- Concurrent development of process, technology, policy, and programs is required to meet aggressive schedules
- SMUD has just begun to explore the capability its new DR systems, processes, and technology can provide
  - “We built it, now we have to learn how to use it.”

# 2013 PowerDirect® AutoDR Pilot Program

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- **Program Design Goals**
  - Provide a reliable, predictable and sustainable load reduction
  - Offer ease of compliance
  - Encourage maximum performance
  - Provide customer choice with four program options to meet customer and SMUD business needs
- **Basis for the long-term PowerDirect® AutoDR program**
  - Economic – Considered along with SMUD supply-side resources
  - Reliability – Planned as required into the SMUD resource portfolio
- **Program Features**
  - Designed to accommodate shorter, more frequent dispatch in addition to longer duration events up to four hours
  - Automated notification, dispatch, and settlement
  - Voluntary customer participation
  - Performance bands for capacity-contract based programs

# Start the Discussion

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- What opportunities does the new demand response capability present?
- How will the customers, utilities, regulators, industry, research, and all other parties work together to explore the possibilities and opportunities?
- How can we build demand response that is reasonable, achievable, and cost-effective to meet a variety of business and resource needs?
- What is needed to gain a long-term commitment to develop the new DR?